

1. With the huge size of your farm, how can you measure the nutrients in soil, especially for N, P and K?

In fact, being an organic farmer, I highly focus on the balance of ecosystem, so I adopt the methods of intercropping and rotation to let the soil recover and the crops to thrive. Of course, we still have to consider the weather and species so that the crops can grow well under good arrangement. Owing to this unique approach, we rarely consider the amount of N, P and K in soil as long as the amounts of the necessary ingredients are enough for crops to grow.

Meanwhile, with the planting plan, the loss of nutrients which can be managed properly will not pose far-reaching effect to the growth of plants. It is quite obvious that we don't need the specific data provided by the biosensors. I think it is much suitable and useful for hydroponics to monitor the nutrient level systemically, thus, they can have a better control on their production and quality via the forecast predict. If one of the critical elements lacks, great pressure will be imposed on their marketing because the quality of their product can be easily affected by the lacking of nutrients. It is more flexible for organic farming comparatively because our clients understand the reasons behind for any delay or quality-related issues of the crops.

Thus, we usually pay attention to the overall growing situation rather than the specific amounts of N, P and K. We just let the Agriculture, Fisheries and Conservation Department to conduct though quality checking on the soil annually for comparison but honestly, we simply focus on the growing conditions without much consideration of the data.

2. Talking about the intercropping and rotation methods, do they waste a lot of time?

That's true, but it is one of the fundamental concepts of organic farming. They are essential for organic farming so we will not pay much attention thinking the possibility of the reduced production. If we want to lift the profits, we would increase the variety of crops and improve the marketing strategy which is much more practical.

3. As you mentioned before, the Agriculture, Fisheries and Conservation Department would only conduct the research once a year, how is the accuracy of it?

That is not so crucial though as we just read the result without paying much attention to it so they won't affect the overall operation. I won't add more for a specific nutrient because of the report unless there is serious shortage for the component. Otherwise, we won't take any action. However, it is not that common to let the land rest. Some organic fertilizer will be supplemented when some symptoms indicate that there is shortage of any nutrients.

4. So you will add back some nutrients during the whole process, is that what you mean?

Yes, we will add back some compost, so the level of N, P and K can also be restored. This is the reason why we are not that keen to carry out the analysis. With the planting plan, we can simply predict the condition of the soil to avoid serious loss of nutrients.

5. Then, you mean you rely on your experience?

Not at all, what we rely on is our planting plan and the growing situation of the crops. When we have to add the compost, unlike some other farmers, we even do not care if we use too much or too less. So, we don't need any device which can show the amount of nutrients accurately.

6. If so, do the accuracy and time required matter and what are the range of them?

Not really. As we will plant different species closely, flow of nutrients is allowed. Just like what I have mentioned before, accurate data is not important owing to the regular addition of compost. By the way, it is also quite hard for us to add organic fertilizer according to the result as the compost has the same composition and we will add the same amount every time. This is our usual practice to restore the nutrients in the farmland so there is no actual application for the accurate data if we simply use the same amount of compost. That's why we even do not bother to think of its accuracy and time.

7. According to your usual practice, you seldom adopt the technology of biosensors in your farm. Do you have any ideas about the biosensors?

Well, I used those things before. Some biosensors were inserted into the soil to monitor the humidity and nutrients and the data could be revealed through apps. At the same time, they were also put into different parts of the farm so that more information could be collected for comparison. In theory, lot of information could be obtained. However, we didn't rely on it so much actually. In my opinion, the biosensors are helpful to the hydroponics whose belief, operation and environment are utterly different from organic farming. They can't wait to see if the plants have something wrong because of the shortage of nutrients. On the other hand, if there is too much supplement, the growth of crops will also be affected. Adding nutrients into the water, the staff have to know the instant change of the amount of the supplement. Otherwise, it can hardly be managed.

8. Explaining the biosensors...Is it really less useful in organic farming compared to hydroponics?

Yes, the hydroponics really needs this because of their operation and mass production. Lots of chemicals will be used during the cultivation, so exact values of each component has to be monitored carefully to maintain stable supply. As less chemicals will be applied for organic farming, the biosensors are not that important for us.

9. If you really have to use the biosensors, what factors will you consider?

Let me put in this way, we will simply depend on our long term observation. When we notice the growing differences of the growth of the plants, we will alter our planting plan. Therefore, I don't have to use the biosensors.

10. For the biosensors you used before, what was its ways of showing the results? Numbers? Colours? Which one do you prefer?

Graphs and data were provided and they could be checked via the apps in the smart phones. These are good and clear.

11. Tell him about the biosensors with bacteria...Will you consider using this biosensor?

Probably not, as we will not have any immediate actions because of the data. It is kind of useless for us.

12. However, there are wide varieties of crops in your plantation and the nutrients they need will also be different. Will this biosensor help you monitor the soil condition and what kind of factors will you think of?

We will still prefer depending on the growth situation rather than looking at the data from biosensors. The reason is that we adopt the methods of intercropping and rotation, therefore, the data given by the biosensors may be affected by the previous plant but not the current one. Thus, it is better for us to continue our original approach. In fact, we don't have to know the changes of soil content right after the addition of compost.

13. For now, the biosensors with bacteria may have some risks, for example, making the crops grow slower. Are you willing to try it?

If it is harmful, we will not use it as we have to consider the safety and health of the public.

14. If it is improved in the future, will you try to use it?

What I would consider is the indispensability. It is not in my first priority. I will improve other facilities first rather than adopting this technology when money is limited.

15. Since the biosensors contain some bacteria, there are some risks. Do you think that we should monitor the invention and application of it?

I think the certification centre should be responsible for this. They may follow the parameters suggested by the government and some international organisations.

16. Are you familiar with how the government monitor the use of bacteria, toxins and heavy metals in soil?

Not at all, but the Agriculture, Fisheries and Conservation Department will conduct research of the soil on heavy metals annually and I think that is enough.

17. How should the government and international organizations monitor the use of the biosensors containing some bacteria?

That is difficult as I am not sure about the effect of bacteria to the crops. Therefore, the government and international organizations should make sure whether they will not harm people and the environment. At the same time, they should set some indexes for the public to follow if there are some negative effects present.

18. With your rich experience in organic farming, do you think that the biosensors will be popular among farmers when government is popularizing farming in Hong Kong?

In my opinion, biosensors may not be wide-spread in farms in HK. However, for the farms and hydroponics which is mechanized and modernized in other countries, it may.

19. Do you think that if we should continue the investigation or not?

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It can be as we should know more about it. Still, it depends on people's needs and demand at the end.